



# ILLINOIS

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## PRODUCTION NOTE

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Population status of the Illinois chorus frog  
(*Pseudacris streckeri illinoensis*)  
in Madison County, Illinois: Results of 2001 surveys

IDOT CONTRACT 1-5-90179

FINAL REPORT ON 2001 RESULTS

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#### DISCLAIMER

The findings, conclusions, and views expressed herein are those of the researchers and should not be considered as the official position of the Illinois Department of Transportation.

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## EXECUTIVE SUMMARY

A study of the biology of the Illinois chorus frog, *Pseudacris streckeri illinoensis*, is reported. Surveys of Madison County for choruses of the frogs located nine choruses in 2001. Eight of these choruses were located at the same sites that choruses were found in 2000. One new site was found where frogs were calling in 2001. The bulk of the study was conducted using drift fences at the wetland mitigation area adjacent to Sand Road in Sec. 19, T4N, R8W. The primary purpose of the 2001 study was to examine spatial variation in use of the mitigation area by the Illinois chorus frog and to estimate population size and density at the mitigation area. I estimated population size using recaptures of frogs previously marked. Lincoln-Petersen index estimate of population size based on recaptures of previously marked frogs was about 70 frogs for both sexes. This estimate is about one-sixth of the 1999 estimate possibly due to unfavorable recruitment in 2000. The apparent reduction in frog numbers was not due to activities associated with wetland restoration. However, had the wetland project not been completed the frog populations may have been even more adversely impacted by the drying of the wetland area. I found the first evidence of surface activity among adult frogs outside of the breeding season. A single frog was collected in September of 1998 suggesting that monitoring of drift fences year-round is important.

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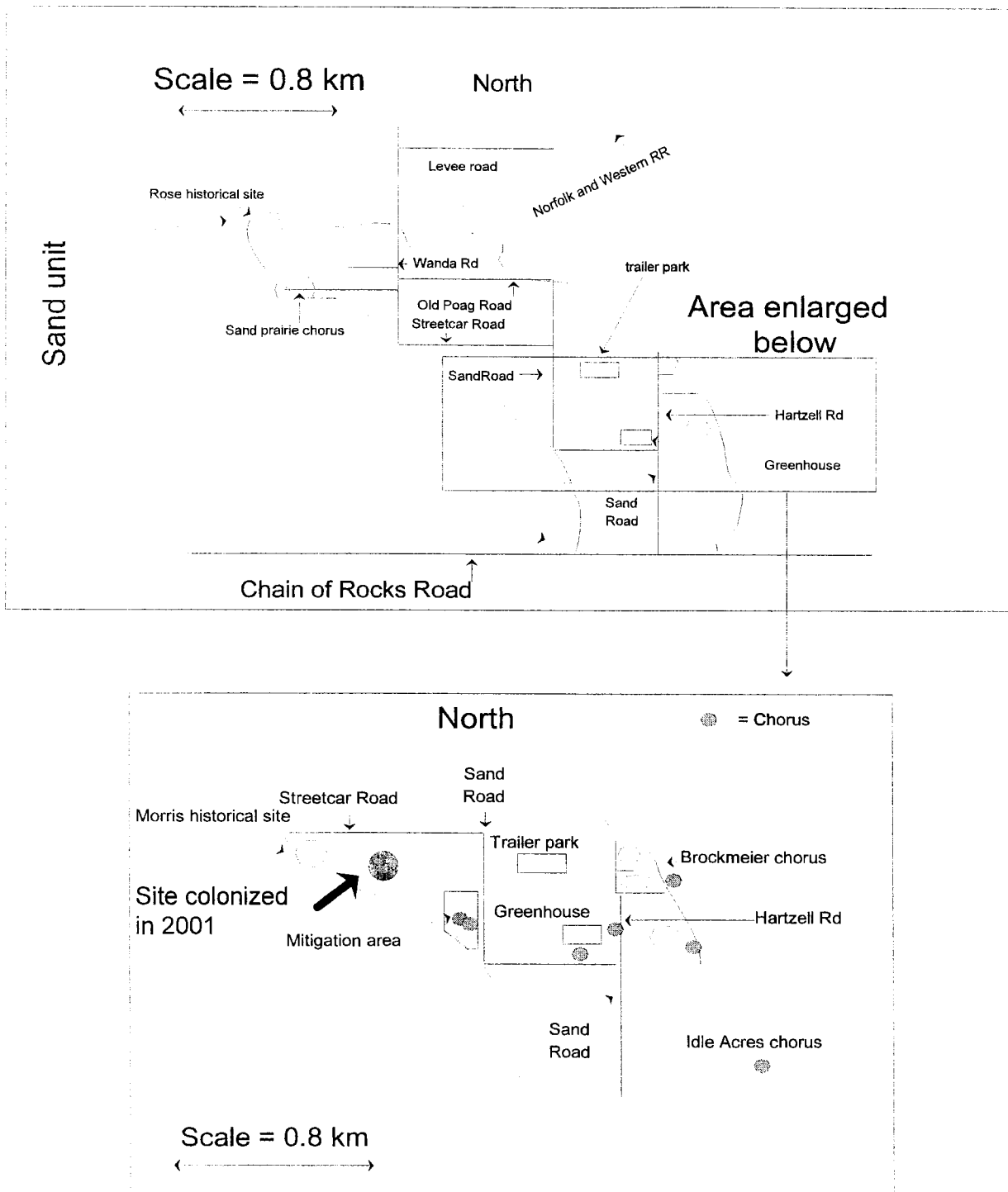
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Figure 1



#### ACKNOWLEDGMENTS

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## INTRODUCTION

The Illinois chorus frog, *Pseudacris streckeri illinoensis*, is restricted to the floodplains of the Mississippi and Illinois rivers in Arkansas, Illinois, and Missouri (Conant and Collins, 1991). The frog is listed as a threatened species in Illinois (Herkert, 1992), as a rare species in Missouri (Anonymous, 1992), as a species of special concern in Arkansas (R. Roberg, pers. comm.), and as federal C-2 species (Dodd et al., 1985).

This highly fossorial frog occurs in Illinois mainly along the central part of the Illinois River (Smith, 1951, 1961, 1966; Morris and Smith, 1981; Taubert et al., 1982; Brown and Rose, 1988; Morris, 1990; Beltz, 1991 and 1993). Other populations are, also, scattered along the Mississippi River from Madison to Alexander Counties, Illinois (Holman et al., 1964; Brown and Brown, 1973; Axtell and Haskell, 1977; Morris and Smith, 1981; Taubert et al., 1982; Gilbert, 1986; Brown and Rose, 1988; Morris, 1990; Beltz, 1991 and 1993; Tucker and Philipp, 1993; 1994; 1995; 1996).

Several previous publications and unpublished reports provide details on the life history of *P. s. illinoensis* including information on underground feeding behavior (Brown, 1978), burrowing behavior (Axtell and Haskell, 1977; Brown et al., 1972; Tucker et al., 1995; Tucker, 1995), chorus sites (Brown and Rose, 1988; Tucker, 1998), fecundity (Butterfield et al., 1989; Tucker and Philipp, 1995; Tucker, 1997a), post-metamorphic growth (Tucker, 1995; Tucker and Philipp, 1995), morphology of newly transformed froglets (Tucker, 1997b); food habits (Tucker, 1997c), thermobiology (Packard et al., 1998), and

morphological adaptations to fossorial existence (Brown and Means, 1984; Paukstis and Brown, 1987 and 1991). The present report is a summary of results for 2001 and a continuation of studies initiated in 1993.

This year's activities carried forward objectives from previous years and include an analysis of the impact of the wetland mitigation area. My objectives were:

1. Monitor the distribution of *P. s. illinoensis* choruses in appropriate habitat in the impact area.
2. Estimate the approximate number of *P. s. illinoensis* located on the wetland mitigation area.

#### CHORUS LOCATIONS IN THE SAND ROAD STUDY AREA

##### MATERIALS AND METHODS

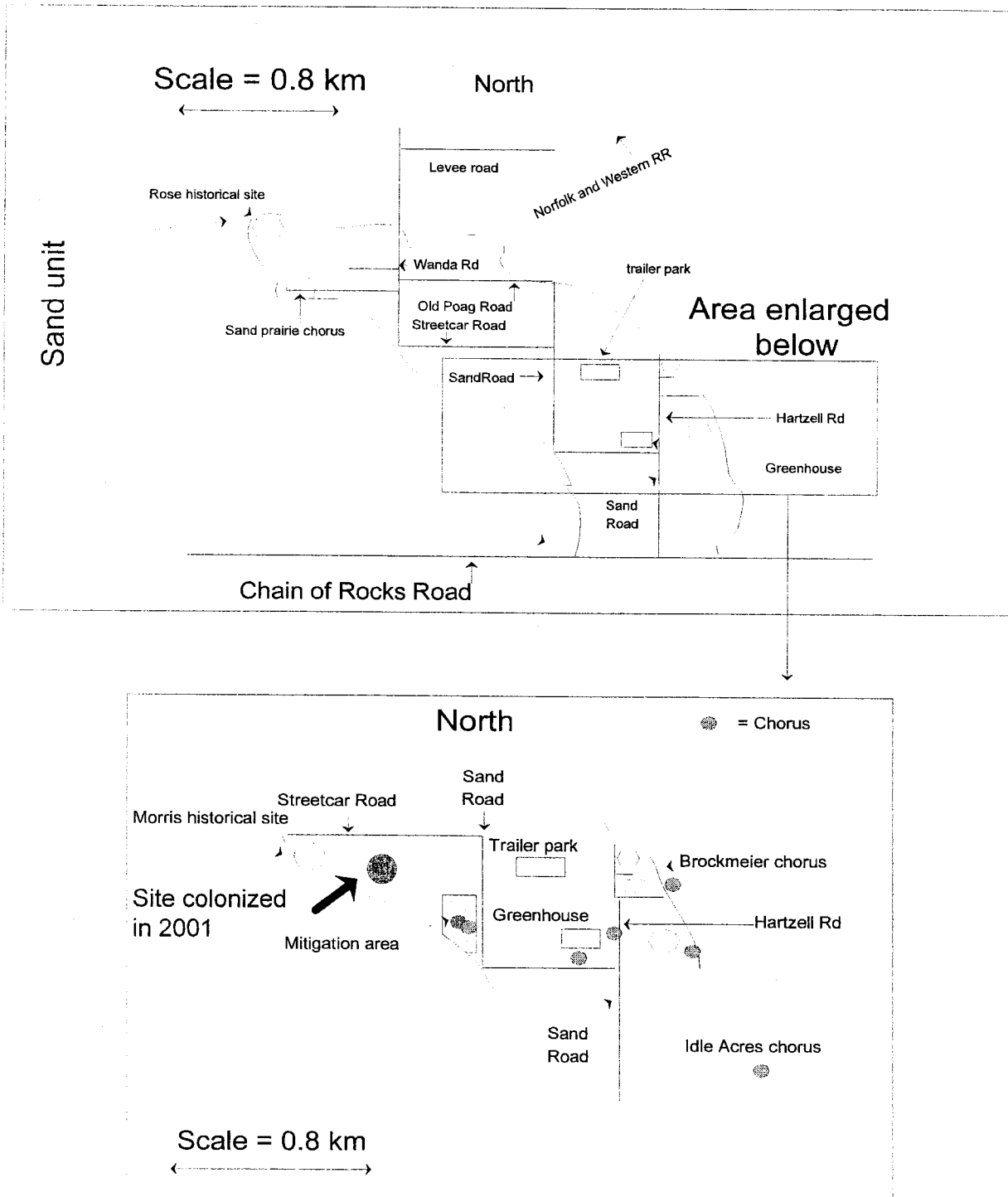
Monitoring of chorus locations in the Sand Road study area (Fig. 1) began on February 16, 2001. The methods used and sites visited were reviewed in previous reports (i.e., Tucker and Philipp, 1996).

##### RESULTS AND DISCUSSION

In 2001, a total of nine choruses were located (Fig. 1). Eight of these locations were sites of choruses in previous years. One new chorus site was found in 2001 (Fig. 1).

Figure 1. Sand Road study area showing the location of the wetland mitigation area and known choruses of the Illinois chorus frog (*Pseudacris streckeri illinoensis*) in Madison County, Illinois.

Figure 1



Generally, chorus sites have been stable in the general study area from 1994-2000 with no indication of recolonization of distant sites where this species is thought to have been extirpated (Tucker and Philipp, 1995; Tucker, 1998). This year's results marked a departure from previous years results with the discovery of a new chorus site. This site occupies a borrow pit created in 1997-1998. The borrow pit is located just south of Streetcar Road and just north of the wetland mitigation site. Likely frogs that colonized this site came from the wetland mitigation area.

#### **POPULATION SIZE ESTIMATES**

##### **MATERIALS AND METHODS**

Population size estimate was made using the Petersen method as modified by Bailey (1951) for estimates of population size when number of recaptures were small (Donnelly and Guyer, 1994). Standard error of was not calculated due to the small number of captures in 2000 and 2001.

##### **RESULTS AND DISCUSSION**

Petersen estimate of population size was 70 total frogs based on recaptures of previously marked frogs (Table 1). The 2001 estimate was only one-sixth of the estimate made in 1997 of about 455 adults (the highest population recorded). Apparently, unfavorable rainfall in the summer and fall of 2000 reduced recruitment in this species.

This conclusion is supported by the few captures made in 2000 and 2001 compared to previous years (Table 1). Nonetheless, the number of frogs caught in 2001 was 6 times higher than the few frogs caught in 2000. This suggests that recruitment from year to year is important in maintaining populations sizes (Tucker, 1995; 1998).



Table 1. Number of Illinois chorus frogs caught from 1996 to 2001.

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Year	Total number		
	of frogs	males	females
1996	60	31	29
1997	86	47	39
1998	22	13	9
1999	151	78	73
2000	2	0	2
2001	12	5	7

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## Summary

The restored wetland actually became available for the frogs to use in 1998. Coincidentally, 1997 was a severe drought year and the number of frogs caught in the following year (1998) was reduced by one-quarter in that compared to previous years. Despite this reduction, captures in 1999 were the highest ever made. These capture rates are not affected by collecting effort because the same drift fences have been used in all years of the study since 1996.

The 2000 year represents the lowest capture rate for any year of the study at the wetland mitigation area. Despite this extremely low capture rate, some frogs were added to the population. Although 2000 was an extremely dry spring, the wetland retained water throughout the breeding season. The few frogs that did breed in 2000 were able to add to the number caught in 2001.

The question that remains to be determined is "how successful is the wetland mitigation project in maintaining the Illinois chorus frog in Madison County?". This question cannot be fully answered at this time. However, frogs survived the driest spring recorded to date in 2000 and added some frogs in 2001. Moreover, and probably more important, a new chorus location was recorded in 2001. Sufficient froglets must have been produced in 1999 and even in the drought year 2000 to colonize this new chorus. Thus early indications are that the wetland project is accomplishing the goals set for it so far as the population status of the Illinois chorus frog is concerned.

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